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Coded Wire Tag Recoveries from the Second Release of Sterile Coho Salmon (*O. kisutch*) into the Marine Environment

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Canadian Data Report of Fisheries and Aquatic Sciences

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CODED WIRE TAG RECOVERIES FROM THE SECOND RELEASE OF STERILE COHO SALMON (*O. kisutch*) INTO THE MARINE ENVIRONMENT

by

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ABSTRACT

Baker, I. J., I. Solar, K. Mulji, E. M. Donaldson, G. A. Hunter, and E. T. Stone. 1989. Coded wire tag recoveries from the second release of sterile coho salmon (Oncorhynchus kisutch) into the marine environment. Can. Data Rep. Fish. Aquat. Sci. No. 775: 21 p.

Data are presented on the contribution to the fishery of sterile and production coho salmon produced at the Capilano Salmon Hatchery in 1981-82 and released in 1983. Sterile coho were produced by androgen treatment in late 1981 and early 1982. A second parallel untreated production group was reared and released as a control. The data shows catch and distribution of the experimental fish in the recreational and commercial fishery based on the recovery of coded wire tags (CWT).

Key words: Oncorhynchus kisutch, coho salmon, androgen, sterilization, coded wire tag

RÉSUME

Baker, I. J., I. Solar, K. Mulji, E. M. Donaldson, G. A. Hunter, and E. T. Stone. 1989. Coded wire tag recoveries from the second release of sterile coho salmon (Oncorhynchus kisutch) into the marine environment. Can. Data Rep. Fish. Aquat. Sci. No. 775: 21 p.

Le rapport présente les résultats de la pêche après que des cohos stériles et fertiles produits à la piscifacture de Capilano en 1981-1982 aient été relâchés en 1983. Les cohos avaient été stérilisés par traitement d'androgène à la fin de 1982 et au début de 1983. Un groupe parallèle de contrôle de cohos fertiles a été élevé et relâché. Les données, basées sur la récupération des micromarques magnétisées codées, montrent les prises et la répartition du poisson expérimental dans les pêches sportive et commerciale.

Mots clés: Oncorhynchus kisutch, coho, androgène, stérilisation, micromarque magnétisée codée

INTRODUCTION

A second experimental pilot group of sterile coho salmon were produced at the Capilano Hatchery, North Vancouver, in the winter of 1981/82 and released in June 1983. This was the second of three releases from Capilano Hatchery intended to measure ocean performance of sterile coho. Two groups of approximately 75,000 coho were selected for this study. The first group was treated as alevins and fry with 17α-methyltestosterone (MT) to produce sterile coho. The second (production) group did not receive any treatment but were reared under the same conditions as the first group to act as a control group. At approximately 6 months of age, a portion of both groups were coded wire tagged (CWT) and fin clipped for identification upon recovery in the fishery.

A larger proportion of sterile fish were tagged to ensure that sufficient numbers of tagged fish would be available for recovery in year classes beyond the normal life span of coho salmon.

The objectives, management applications and methods of administration of the treatments for the production of sterile salmonids for ocean release and mariculture have been reviewed by Donaldson and Hunter (1982, 1985), Hunter and Donaldson (1983), and Donaldson (1986). The first release of sterile and all-female coho into the marine environment has been reported by Donaldson et al. (1984) and Solar et al. (1986).

This report represents a summary of the 1983 sterile and production coho release from data generated through the MRP-Reporter Program: A data extraction and reporting tool for the mark recovery program database (Kuhn 1988) and An Introduction to the Canadian Database on marked Pacific salmonids (Kuhn et al. 1988).

DATA

The data is presented in Tables as follows:

Table 1. Release Header Report. Gives the identity of each group (CWT numbers) and summary information on the quantities and size of the fish marked and released.

Table 2. Detailed Recoveries by Catch Region and age. Includes the observed, estimated and expanded CWT recoveries by Catch Regions, shown by age classes, in the B.C. commercial (troll=TR and net=N) and sport (SPT) fisheries. For the commercial catch, "observed" is the actual number of tags recovered in a sample of the fishery at a chosen sampling time; "estimated" is an extension of the number of marks recovered to the number of fish caught, and "expanded" is an extension of the latter to account for the proportion of marked fish

in the total number of fish released. For the sport data the same definitions apply with the exception of "estimated" which in this case takes into account the "awareness factor" or ratio of the number reported by the sport fishermen to the number caught.

Table 3. Detailed Recoveries Report by Catch Region, Monthly. Shows the CWT recoveries (observed, estimated and expanded) by recovery year (ages) at monthly intervals.

Table 4. Size of fish in the Commercial Fishery by Recovery Year (ages 3, 4 and 5). Length is shown in mm and weight is shown in kg. For the sport fishery, both weight and length were unavailable.

Table 5. Commercial and sport catch regions and statistical areas, in the form they were grouped to produce Tables 7 and 8 (Fig. 1 and 2).

Table 6. A summary of the total contribution of these releases to the fishery over the period 1983 to 1986 (ages 2 to 5). In consideration of the different quantities of fish released and marked from each group (Table 1) and for the purpose of making the contribution comparable the expanded totals of Table 2 have been adjusted to show "per 10,000 fish released." The hatchery escapement and U.S. recoveries data were obtained from SEP, Operations (Carol Cross, personal communication).

Table 7. Detail of the commercial and sport recovery data shown in Table 6, by catch regions and year classes.

Table 8. Detail of the sport fishery included in Georgia Strait Catch Region of Table 7, by statistical areas. Isolated recoveries in sport catch regions other than Georgia Strait (GSPT) were disregarded.

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Table 1. Release Header Report.

TAG CODE	GROUP	STOCK	Broodyear	No. tagged	No. released	CWT % marked	Size at release (gm)	Release date day/month/yr	Release site	Fin clips	Study type
022162	Sterile	Capilano coho	81	70007	78905	88.7	18.9	01 June 83	Capilano River	Adipose	Experimental
022423	Production	Capilano coho	81	27495	69476	39.6	21.2	01 June 83	Capilano River	Adipose	Experimental
	Grand Totals:			97502	148381						

Table 2. Detailed recoveries by catch region and age. Capilano coho, 1981 broodyear (see Table 5 and Fig. 1 for definition of abreviations).

Fishery - B.C Commercial & Sport CATCH REGION		AGE CLASSES 2	3	4	5	6	TOTAL
	GROUP	TAG CODE					
	STERILE	022162					
GSTR	Obs:	0	44	10	2	0	56
	Est:	0	178	51	6	0	235
	Exp:	0	201	58	6	0	265
NCTR	Obs:	0	1	0	0	0	1
	Est:	0	4	0	0	0	4
	Exp:	0	4	0	0	0	4
NTR	Obs:	0	2	0	0	0	2
	Est:	0	14	0	0	0	14
	Exp:	0	15	0	0	0	15
NWTR	Obs:	0	16	11	3	0	30
	Est:	0	80	53*	14	0	147
	Exp:	0	91	59*	15	0	165
SCTR	Obs:	0	10	2	0	0	12
	Est:	0	61	8	0	0	69
	Exp:	0	69	9	0	0	78
SWTR	Obs:	0	152	35	6	0	193
	Est:	0	770	167	37	0	974
	Exp:	0	868	189	42	0	1099
FGN	Obs:	0	17	1	0	0	18
	Est:	0	40	4	0	0	44
	Exp:	0	45	5	0	0	50
GSN	Obs:	0	13	3	0	0	16
	Est:	0	33	11	0	0	44
	Exp:	0	37	13	0	0	50
JFN	Obs:	0	56	11	2	0	69
	Est:	0	179	48	9	0	236
	Exp:	0	202	54	10	0	266
JSN	Obs:	0	18	4	0	0	22
	Est:	0	83	15	0	0	98
	Exp:	0	93	17	0	0	110
SWVN	Obs:	0	1	0	0	0	1
	Est:	0	1	0	0	0	1
	Exp:	0	1	0	0	0	1
CSPT	Obs:	0	2	0	0	0	2
	Est:	0	8*	0	0	0	8
	Exp:	0	9*	0	0	0	9
GSPT	Obs:	1	162	44	3	0	210
	Est:	3	589*	164	15	0	771
	Exp:	4	663*	184	17	0	868
WSPT	Obs:	0	1	0	0	0	1
	Est:	0	4*	0	0	0	4
	Exp:	0	4*	0	0	0	4

Table 2 (cont'd)

Fishery - B.C Commercial & Sport CATCH REGION		AGE CLASSES 2	3	4	5	6	TOTAL
FWSP	Obs:	0	3	0	0	0	3
	Est:	0	12*	0	0	0	12
	Exp:	0	13*	0	0	0	13
CDN ESCMENT	Obs:	0	365	15	0	0	380
	Est:	0	408	15	0	0	423
	Exp:	0	460	17	0	0	477
TAG CODE TOTALS:							
Troll	Obs:	0	225	58	11	0	294
	Est:	0	1108	280	56	0	1444
	Exp:	0	1248	315	64	0	1627
Net	Obs:	0	105	19	2	0	126
	Est:	0	335	79	9	0	423
	Exp:	0	378	89	10	0	477
Ocean Sport	Obs:	1	165	44	3	0	213
	Est:	3	601	164	15	0	783
	Exp:	4	677	184	17	0	882
Fresh Sport	Obs:	0	3	0	0	0	3
	Est:	0	12	0	0	0	12
	Exp:	0	13	0	0	0	13
Escapement	Obs:	0	365	15	0	0	380
	Est:	0	408	15	0	0	423
	Exp:	0	460	17	0	0	477
Total	Obs:	1	863	136	16	0	1016
	Est:	3	2464	538	80	0	3085
	Exp:	4	2777	606	90	0	3477
	GROUP PRODUCTION	TAG CODE 022423					
GSTR	Obs:	0	22	0	0	0	22
	Est:	0	104	0	0	0	104
	Exp:	0	263	0	0	0	263
NCTR	Obs:	0	1	0	0	0	1
	Est:	0	4	0	0	0	4
	Exp:	0	9	0	0	0	9
NWTR	Obs:	0	13	0	0	0	13
	Est:	0	64	0	0	0	64
	Exp:	0	163	0	0	0	163
SCTR	Obs:	0	1	0	0	0	1
	Est:	0	8	0	0	0	8
	Exp:	0	20	0	0	0	20
SWTR	Obs:	0	91	2	0	0	93
	Est:	0	449	9	0	0	458
	Exp:	0	1134	23	0	0	1157
FGN	Obs:	0	18	0	0	0	18
	Est:	0	46	0	0	0	46

Table 2 (con't)

Fishery - B.C Commercial & Sport CATCH REGION		AGE CLASSES 2	3	4	5	6	TOTAL
	Exp:	0	117	0	0	0	117
GSN	Obs:	0	4	0	0	0	4
	Est:	0	27	0	0	0	27
	Exp:	0	68	0	0	0	68
JFN	Obs:	0	53	0	0	0	53
	Est:	0	153	0	0	0	153
	Exp:	0	387	0	0	0	387
JSN	Obs:	0	22	0	0	0	22
	Est:	0	117	0	0	0	117
	Exp:	0	296	0	0	0	296
SWVN	Obs:	0	2	0	0	0	2
	Est:	0	5	0	0	0	5
	Exp:	0	13	0	0	0	13
CSPT	Obs:	0	1	0	0	0	1
	Est:	0	4*	0	0	0	4
	Exp:	0	10*	0	0	0	10
GSPT	Obs:	0	215	0	0	0	215
	Est:	0	801*	0	0	0	801
	Exp:	0	2023*	0	0	0	2023
FWSP	Obs:	0	4	0	0	0	4
	Est:	0	16*	0	0	0	16
	Exp:	0	40*	0	0	0	40
CDN ESCMENT	Obs:	39	588	0	0	0	627
	Est:	51	658	0	0	0	709
	Exp:	129	1662	0	0	0	1791
TAG CODE TOTALS:							
Troll	Obs:	0	128	2	0	0	130
	Est:	0	629	9	0	0	638
	Exp:	0	1589	23	0	0	1612
Net	Obs:	0	99	0	0	0	99
	Est:	0	349	0	0	0	349
	Exp:	0	883	0	0	0	883
Ocean Sport	Obs:	0	216	0	0	0	216
	Est:	0	805	0	0	0	805
	Exp:	0	2033	0	0	0	2033
Fresh Sport	Obs:	0	4	0	0	0	4
	Est:	0	16	0	0	0	16
	Exp:	0	40	0	0	0	40
Escapement	Obs:	39	588	0	0	0	627
	Est:	51	658	0	0	0	709
	Exp:	129	1662	0	0	0	1791
Total	Obs:	39	1035	2	0	0	1076
	Est:	51	2456	9	0	0	2516
	Exp:	129	6207	23	0	0	6359

* Error or insufficient data in calculating the catch/sample ratio, therefore, a catch/sample ratio of 1 was used in calculating estimated and expanded values.

TABLE 3. Detailed recoveries by catch region, monthly.

Fishery - B.C. Commercial and Sport Catch region		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
							MONTHS							
	GROUP	TAG CODE						RECOVERY YEAR 1983 - AGE 2						
	STERILE	022162												
GSPT	Obs:	0	0	0	0	0	0	0	0	1	0	0	0	1
	Est:	0	0	0	0	0	0	0	0	3	0	0	0	3
	Exp:	0	0	0	0	0	0	0	0	4	0	0	0	4
	GROUP	TAG CODE						RECOVERY YEAR 1984 - AGE 3						
	STERILE	022162												
GSTR	Obs:	0	0	0	0	0	0	30	14	0	0	0	0	44
	Est:	0	0	0	0	0	0	144	34	0	0	0	0	178
	Exp:	0	0	0	0	0	0	162	39	0	0	0	0	201
NCTR	Obs:	0	0	0	0	0	0	1	0	0	0	0	0	1
	Est:	0	0	0	0	0	0	4	0	0	0	0	0	4
	Exp:	0	0	0	0	0	0	4	0	0	0	0	0	4
NTR	Obs:	0	0	0	0	0	0	1	1	0	0	0	0	2
	Est:	0	0	0	0	0	0	9	5	0	0	0	0	14
	Exp:	0	0	0	0	0	0	10	5	0	0	0	0	15
NWTR	Obs:	0	0	0	0	0	0	7	7	2	0	0	0	16
	Est:	0	0	0	0	0	0	38	33	9	0	0	0	80
	Exp:	0	0	0	0	0	0	43	37	10	0	0	0	90
SCTR	Obs:	0	0	0	0	0	0	5	2	3	0	0	0	10
	Est:	0	0	0	0	0	0	32	18	11	0	0	0	61
	Exp:	0	0	0	0	0	0	36	21	12	0	0	0	69
SWTR	Obs:	0	0	0	0	0	0	87	28	37	0	0	0	152
	Est:	0	0	0	0	0	0	423	185	163	0	0	0	771
	Exp:	0	0	0	0	0	0	477	208	183	0	0	0	868
FGN	Obs:	0	0	0	0	0	0	0	5	12	0	0	0	17
	Est:	0	0	0	0	0	0	0	13	27	0	0	0	40
	Exp:	0	0	0	0	0	0	0	14	31	0	0	0	45
GSN	Obs:	0	0	0	0	0	0	2	1	0	10	0	0	13
	Est:	0	0	0	0	0	0	11	5	0	17	0	0	33
	Exp:	0	0	0	0	0	0	12	5	0	19	0	0	36
JFN	Obs:	0	0	0	0	0	0	6	50	0	0	0	0	56
	Est:	0	0	0	0	0	0	18	161	0	0	0	0	179
	Exp:	0	0	0	0	0	0	20	182	0	0	0	0	202
JSN	Obs:	0	0	0	0	0	0	4	10	3	1	0	0	18
	Est:	0	0	0	0	0	0	12	59	8	3	0	0	82
	Exp:	0	0	0	0	0	0	14	67	9	3	0	0	93
SWVN	Obs:	0	0	0	0	0	0	0	0	0	1	0	0	1
	Est:	0	0	0	0	0	0	0	0	0	1	0	0	1
	Exp:	0	0	0	0	0	0	0	0	0	1	0	0	1
CSPT	Obs:	0	0	0	0	0	0	1	1	0	0	0	0	2
	Est:	0	0	0	0	0	0	4	4*	0	0	0	0	8
	Exp:	0	0	0	0	0	0	4	4*	0	0	0	0	8
GSPT	Obs:	0	1	5	5	23	42	40	31	11	3	0	1	162
	Est:	0	3	15	18	75	128	135	143	56	12*	0	4*	589
	Exp:	0	3	17	21	84	144	152	162	63	13*	0	4*	663

Table 3 (cont'd)

Fishery - B.C. Commercial and Sport Catch region		MONTHS Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
CSPT	Obs:	0	1	5	5	23	42	40	31	11	3	0	1	162
	Est:	0	3	15	18	75	128	135	143	56	12*	0	4*	589
	Exp:	0	3	17	21	84	144	152	162	63	13*	0	4*	663
WSPT	Obs:	0	0	0	0	1	0	0	0	0	0	0	0	1
	Est:	0	0	0	0	4*	0	0	0	0	0	0	0	4
	Exp:	0	0	0	0	4*	0	0	0	0	0	0	0	4
FWSP	Obs:	0	0	0	0	0	0	0	0	0	2	1	0	3
	Est:	0	0	0	0	0	0	0	0	0	8*	4*	0	12
	Exp:	0	0	0	0	0	0	0	0	0	9*	4*	0	13
RECOVERY YEAR TOTALS:														
Troll	Obs:	0	0	0	0	0	0	131	52	42	0	0	0	225
	Est:	0	0	0	0	0	0	650	275	183	0	0	0	1108
	Exp:	0	0	0	0	0	0	733	310	206	0	0	0	1249
Net	Obs:	0	0	0	0	0	0	12	66	15	12	0	0	105
	Est:	0	0	0	0	0	0	41	238	36	21	0	0	336
	Exp:	0	0	0	0	0	0	46	268	40	24	0	0	378
Ocean Sport	Obs:	0	1	5	5	24	42	41	32	11	3	0	1	165
	Est:	0	3	15	18	79	128	139	147	56	12	0	4	601
	Exp:	0	3	17	21	89	144	157	166	63	13	0	4	677
Fresh Sport	Obs:	0	0	0	0	0	0	0	0	0	2	1	0	3
	Est:	0	0	0	0	0	0	0	0	0	8	4	0	12
	Exp:	0	0	0	0	0	0	0	0	0	9	4	0	13
Total	Obs:	0	1	5	5	24	42	184	150	68	17	1	1	498
	Est:	0	3	15	18	79	128	830	660	275	41	4	4	2057
	Exp:	0	3	17	21	89	144	935	744	309	46	4	4	2316
		GROUP STERILE	TAG CODE 022162					RECOVERY YEAR 1985 - AGE 4						
GSTR	Obs:	0	0	0	0	0	0	8	1	0	1	0	0	10
	Est:	0	0	0	0	0	0	40	4	0	8	0	0	52
	Exp:	0	0	0	0	0	0	45	4	0	9	0	0	58
NWTR	Obs:	0	0	0	0	0	0	4	3	2	2	0	0	11
	Est:	0	0	0	0	0	0	25	16	5*	6	0	0	52
	Exp:	0	0	0	0	0	0	29	18	6*	7	0	0	60
SCTR	Obs:	0	0	0	0	0	0	2	0	0	0	0	0	2
	Est:	0	0	0	0	0	0	8	0	0	0	0	0	8
	Exp:	0	0	0	0	0	0	9	0	0	0	0	0	9
SWTR	Obs:	0	0	0	0	0	0	9	10	16	0	0	0	35
	Est:	0	0	0	0	0	0	48	52	67	0	0	0	167
	Exp:	0	0	0	0	0	0	54	59	75	0	0	0	188
FGN	Obs:	0	0	0	0	0	0	0	1	0	0	0	0	1
	Est:	0	0	0	0	0	0	0	4	0	0	0	0	4
	Exp:	0	0	0	0	0	0	0	5	0	0	0	0	5
GSN	Obs:	0	0	0	0	0	0	0	1	0	2	0	0	3
	Est:	0	0	0	0	0	0	0	9	0	3	0	0	12

Table 3 (cont'd)

Fishery - B.C. Commercial and Sport Catch region		MONTHS Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
	Exp:	0	0	0	0	0	0	0	10	0	3	0	0	13
JFN	Obs:	0	0	0	0	0	0	1	6	4	0	0	0	11
	Est:	0	0	0	0	0	0	4	27	16	0	0	0	47
	Exp:	0	0	0	0	0	0	5	31	18	0	0	0	54
JSN	Obs:	0	0	0	0	0	0	1	0	3	0	0	0	4
	Est:	0	0	0	0	0	0	6	0	10	0	0	0	16
	Exp:	0	0	0	0	0	0	6	0	11	0	0	0	17
GSPT	Obs:	1	0	0	3	8	9	14	4	5	0	0	0	44
	Est:	1	0	0	14	23	25	47	24	28	0	0	0	162
	Exp:	1	0	0	16	26	28	53	28	32	0	0	0	184
RECOVERY YEAR TOTALS:														
Troll	Obs:	0	0	0	0	0	0	23	14	18	3	0	0	58
	Est:	0	0	0	0	0	0	12	72	72	1	0	0	280
	Exp:	0	0	0	0	0	0	13	81	81	1	0	0	315
Net	Obs:	0	0	0	0	0	0	2	8	7	2	0	0	19
	Est:	0	0	0	0	0	0	10	40	25	3	0	0	78
	Exp:	0	0	0	0	0	0	11	46	29	3	0	0	89
Ocean Sport	Obs:	1	0	0	3	8	9	14	4	5	0	0	0	44
	Est:	1	0	0	14	23	25	47	24	28	0	0	0	162
	Exp:	1	0	0	16	26	28	53	28	32	0	0	0	184
Total	Obs:	1	0	0	3	8	9	39	26	30	5	0	0	121
	Est:	1	0	0	14	23	25	180	137	125	1	0	0	522
	Exp:	1	0	0	16	26	28	202	155	141	1	0	0	588
		GROUP STERILE	TAG CODE 022162					RECOVERY YEAR 1986 - AGE 5						
GSTR	Obs:	0	0	0	0	0	0	1	0	1	0	0	0	2
	Est:	0	0	0	0	0	0	3	0	3	0	0	0	6
	Exp:	0	0	0	0	0	0	3	0	3	0	0	0	6
NWTR	Obs:	0	0	0	0	0	1	1	1	0	0	0	0	3
	Est:	0	0	0	0	0	3	4	7	0	0	0	0	14
	Exp:	0	0	0	0	0	3	4	8	0	0	0	0	15
SWTR	Obs:	0	0	0	0	0	2	3	1	0	0	0	0	6
	Est:	0	0	0	0	0	10	19	9	0	0	0	0	38
	Exp:	0	0	0	0	0	11	21	10	0	0	0	0	42
JFN	Obs:	0	0	0	0	0	0	0	2	0	0	0	0	2
	Est:	0	0	0	0	0	0	0	9	0	0	0	0	9
	Exp:	0	0	0	0	0	0	0	10	0	0	0	0	10
GSPT	Obs:	0	0	0	0	0	0	2	0	1	0	0	0	3
	Est:	0	0	0	0	0	0	9	0	6	0	0	0	15
	Exp:	0	0	0	0	0	0	10	0	7	0	0	0	17
RECOVERY YEAR TOTALS:														
Troll	Obs:	0	0	0	0	0	3	5	2	1	0	0	0	11
	Est:	0	0	0	0	0	13	26	15	3	0	0	0	57

Table 3 (cont'd)

Fishery - B.C. Commercial and Sport Catch region		MONTHS Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
	Exp:	0	0	0	0	0	14	29	17	3	0	0	0	63
Net	Obs:	0	0	0	0	0	0	0	2	0	0	0	0	2
	Est:	0	0	0	0	0	0	0	9	0	0	0	0	9
	Exp:	0	0	0	0	0	0	0	10	0	0	0	0	10
Ocean Sport	Obs:	0	0	0	0	0	0	2	0	1	0	0	0	3
	Est:	0	0	0	0	0	0	9	0	6	0	0	0	15
	Exp:	0	0	0	0	0	0	10	0	7	0	0	0	17
Total	Obs:	0	0	0	0	0	3	7	4	2	0	0	0	16
	Est:	0	0	0	0	0	13	34	24	9	0	0	0	80
	Exp:	0	0	0	0	0	14	39	27	10	0	0	0	90
		GROUP PRODUCTION	TAG CODE 022423					RECOVERY YEAR 1984 - AGE 3						
GSTR	Obs:	0	0	0	0	0	0	21	1	0	0	0	0	22
	Est:	0	0	0	0	0	0	102	2	0	0	0	0	104
	Exp:	0	0	0	0	0	0	258	5	0	0	0	0	263
NCTR	Obs:	0	0	0	0	0	0	1	0	0	0	0	0	1
	Est:	0	0	0	0	0	0	4	0	0	0	0	0	4
	Exp:	0	0	0	0	0	0	9	0	0	0	0	0	9
NWTR	Obs:	0	0	0	0	0	0	9	4	0	0	0	0	13
	Est:	0	0	0	0	0	0	47	17	0	0	0	0	64
	Exp:	0	0	0	0	0	0	119	44	0	0	0	0	163
SCTR	Obs:	0	0	0	0	0	0	1	0	0	0	0	0	1
	Est:	0	0	0	0	0	0	8	0	0	0	0	0	8
	Exp:	0	0	0	0	0	0	20	0	0	0	0	0	20
SWTR	Obs:	0	0	0	0	0	0	55	16	20	0	0	0	91
	Est:	0	0	0	0	0	0	250	107	91	0	0	0	448
	Exp:	0	0	0	0	0	0	633	271	230	0	0	0	1134
FGN	Obs:	0	0	0	0	0	0	0	3	15	0	0	0	18
	Est:	0	0	0	0	0	0	0	9	37	0	0	0	46
	Exp:	0	0	0	0	0	0	0	23	95	0	0	0	118
GSN	Obs:	0	0	0	0	0	0	2	2	0	0	0	0	4
	Est:	0	0	0	0	0	0	18	9	0	0	0	0	27
	Exp:	0	0	0	0	0	0	45	23	0	0	0	0	68
JFN	Obs:	0	0	0	0	0	0	5	48	0	0	0	0	53
	Est:	0	0	0	0	0	0	15	138	0	0	0	0	153
	Exp:	0	0	0	0	0	0	38	349	0	0	0	0	387
JSN	Obs:	0	0	0	0	0	0	7	15	0	0	0	0	22
	Est:	0	0	0	0	0	0	22	96	0	0	0	0	118
	Exp:	0	0	0	0	0	0	55	241	0	0	0	0	296
SWVN	Obs:	0	0	0	0	0	0	1	1	0	0	0	0	2
	Est:	0	0	0	0	0	0	3	2	0	0	0	0	5
	Exp:	0	0	0	0	0	0	7	6	0	0	0	0	13
CSPT	Obs:	0	0	0	0	0	0	0	1	0	0	0	0	1
	Est:	0	0	0	0	0	0	0	4*	0	0	0	0	4
	Exp:	0	0	0	0	0	0	0	10*	0	0	0	0	10
GSPT	Obs:	0	3	1	6	27	33	77	44	19	4	1	0	215

Table 3 (cont'd)

Fishery - B.C. Commercial and Sport Catch region		MONTHS Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
	Est:	0	8	3	22	88	100	260	203	97	16*	4*	0	801
	Exp:	0	19	8	56	221	253	656	514	245	40*	10*	0	2022
FWSP	Obs:	0	0	0	0	0	0	0	1	0	1	2	0	4
	Est:	0	0	0	0	0	0	0	4*	0	4*	8*	0	16
	Exp:	0	0	0	0	0	0	0	10*	0	10*	20*	0	40
RECOVERY YEAR TOTALS:														
Troll	Obs:	0	0	0	0	0	0	87	21	20	0	0	0	128
	Est:	0	0	0	0	0	0	411	127	91	0	0	0	629
	Exp:	0	0	0	0	0	0	1039	321	230	0	0	0	1590
Net	Obs:	0	0	0	0	0	0	15	69	15	0	0	0	99
	Est:	0	0	0	0	0	0	57	254	37	0	0	0	348
	Exp:	0	0	0	0	0	0	145	643	95	0	0	0	883
Ocean Sport	Obs:	0	3	1	6	27	33	77	45	19	4	1	0	216
	Est:	0	8	3	22	88	100	260	207	97	16	4	0	805
	Exp:	0	19	8	56	221	253	656	524	245	40	10	0	2032
Fresh Sport	Obs:	0	0	0	0	0	0	0	1	0	1	2	0	4
	Est:	0	0	0	0	0	0	0	4	0	4	8	0	16
	Exp:	0	0	0	0	0	0	0	10	0	10	20	0	40
Total	Obs:	0	3	1	6	27	33	179	136	54	5	3	0	447
	Est:	0	8	3	22	88	100	728	593	226	20	12	0	1800
	Exp:	0	19	8	56	221	253	1840	1497	570	50	30	0	4544
		GROUP PRODUCTION	TAG CODE 022423					RECOVERY YEAR 1985 - AGE 4						
SWTR	Obs:	0	0	0	0	0	0	2	0	0	0	0	0	2
	Est:	0	0	0	0	0	0	9	0	0	0	0	0	9
	Exp:	0	0	0	0	0	0	23	0	0	0	0	0	23

* Error or insufficient data in calculating the catch/sample ratio, therefore, a catch/sample ratio of 1 was used in calculating estimated and expanded values.

Table 4. Length in mm and weight in kg of coho salmon in the fishery by recovery year.

RECOVERY YEAR 1984 - AGE 3

Fishery	Observed	Mean Length	Length Sample Size	Length S.D.	Mean Weight	Weight Sample Size
GROUP STERILE	TAG CODE 022162					
B.C. Commercial	330	495	319	45.5	1.5	72
B.C. Sport - Marine	165	-	0	-	-	0
B.C. Sport - Freshwater	3	-	0	-	-	0
Total Commercial	330	495	319	45.5	1.5	72
Total Sport	168	-	0	-	-	0
Escapement - rack	365	-	0	-	-	0
* Grand Total *	863	495	319	45.5	1.5	72
GROUP PRODUCTION	TAG CODE 022423					
B.C. Commercial	227	520	222	50.6	1.8	71
B.C. Sport - Marine	216	-	0	-	-	0
B.C. Sport - Freshwater	4	-	0	-	-	0
Total Commercial	227	520	222	50.6	1.8	71
Total Sport	220	-	0	-	-	0
Escapement - rack	588	-	0	-	-	0
* Grand Total *	1035	520	222	50.6	1.8	71

RECOVERY YEAR 1985 - AGE 4

GROUP STERILE	TAG CODE 022162					
B.C. Commercial	77	654	63	53.8	3.4	18
B.C. Sport - Marine	44	-	0	-	-	0
Total Commercial	77	654	63	53.8	3.4	18
Total Sport	44	-	0	-	-	0
Escapement - rack	15	-	0	-	-	0
* Grand Total *	136	654	63	53.8	3.4	18
GROUP PRODUCTION	TAG CODE 022423					
B.C. Commercial	2	624	2	68.6	-	0
Total Commercial	2	624	2	68.6	-	0
* Grand Total *	2	624	2	68.6	-	0

RECOVERY YEAR 1986 - AGE 5

GROUP STERILE	TAG CODE 022162					
B.C. Commercial	13	673	13	90.3	3.2	1
B.C. Sport - Marine	3	-	0	-	-	0
Total Commercial	13	673	13	90.3	3.2	1
Total Sport	3	-	0	-	-	0
* Grand Total *	16	673	13	90.3	3.2	1

TABLE 5. Commercial and sport catch regions and corresponding catch regions and statistical areas (abbreviations used in Tables 2 and 3 and Figures 1 and 2).

Commercial C.R.	Catch regions included	Statistical areas
Northern (N)	Northern Troll (NTR)	1-5
	Northern Net (NN)	1-5
Central(C)	Central Troll (CTR)	6-12, 30
	Central Net (CN)	6-11
Northwest Van. Isl. (NW)	Northwest Troll (NWTR)	25-27
	Northwest Net (NWVN)	25-27
Southwest Van. Isl. (SW)	Southwest Troll (SWTR)	21, 23, 24
	Southwest Net (SWVN)	21-24
Johnstone Str. (JS)	Johnstone Strait Net (JSN)	12-13
Georgia Str. (GS)	Georgia Strait Troll (GSTR)	13-18, 29A-29C
	Georgia Strait Net (GSN)	14-18
	Fraser River Gillnet (FGN)	29A-29E
Juan De Fuca Str. (JF)	Juan De Fuca Net (JFN)	20
Georgia Str. Sport	Georgia Str. Sport (GSPT)	13-20, 28, 29

TABLE 6. Total contribution to the fishery per 10,000 fish released. Capilano coho brood 1981.

Fishery		Sport				Sub-total	Commercial				Sub-total	U.S. recoveries				Sub-total	Fishery total				
Year, Group CWT #	Age	2	3	4	5		2	3	4	5		2	3	4	5		1983 2	1984 3	1985 4	1986 5	Total
1981																					
Sterile 02 21 62		1	87	23	2	113	0	205	51	9	265	0	27	6	1	34	1	319	80	12	412
Production 02 24 23		0	298	0	0	298	0	356	3	0	359	0	80	0	0	80	0	734	3	0	737
	Total	1	385	23	2	411	0	561	54	9	624	0	107	6	1	114	1	1053	83	12	1149

Fishery		Hatchery escapement			Sub-total	Grand total				
Year, Group CWT #	Age	2	3	4		1983 2	1984 3	1985 4	1986 5	Total
1981										
Sterile 02 16 03		0	58	2	60	1	377	82	12	472
Production 02 21 26		19	239	0	258	19	973	3	0	995
	Total	19	297	2	318	20	1350	85	12	1467

TABLE 7. Sport and commercial fisheries contribution by catch region based on 10,000 fish released.

		Capilano coho brood 1981										
			Sport					Commercial				
Catch region	Group[1]	Age 2	3	4	5	Sub-total	2	3	4	5	Sub-total	Total
Northern	ST	0	0	0	0	0	0	2	0	0	2	2
	PR	0	0	0	0	0	0	0	0	0	0	0
Central	ST	0	1	0	0	1	0	9	1	0	10	11
	PR	0	3	0	0	3	0	4	0	0	4	7
Northwest V.I.	ST	0	0	0	0	0	0	12	8	2	22	22
	PR	0	0	0	0	0	0	23	0	0	23	23
Southwest V.I.	ST	0	0	0	0	0	0	110	24	5	139	139
	PR	0	0	0	0	0	0	165	3	0	168	168
Johnstone Strait	ST	0	0	0	0	0	0	12	2	0	14	14
	PR	0	0	0	0	0	0	43	0	0	43	43
Georgia Strait	ST	1	86	23	2	112	0	36	10	1	47	159
	PR	0	297	0	0	297	0	65	0	0	65	362
Juan de Fuca Strait	ST	0	0	0	0	0	0	26	7	1	34	34
	PR	0	0	0	0	0	0	56	0	0	56	56

[1] ST = sterile; PR = Production

TABLE 8. Georgia Strait sport fishery contribution per 10,000 fish released, by statistical areas. Capilano coho brood 1981.

Year, Group	Age	2 (1983)	3 (1984)										4 (1985)						5 (1986)		Total
CWT #	Statistical area	14	13	14	15	16	17	18	19	20	28	29	13	14	15	16	17	28	15	16	
1981																					
Sterile 02 21 62		4	6	24	1	15	19	0	4	3	10	1	5	8	1	5	3	1	2	1	113
Production 02 24 23		0	21	86	7	57	40	2	8	8	60	1	0	0	0	0	0	0	0	0	290
	Total	4	27	110	8	72	59	2	12	11	70	2	5	8	1	5	3	1	2	1	403

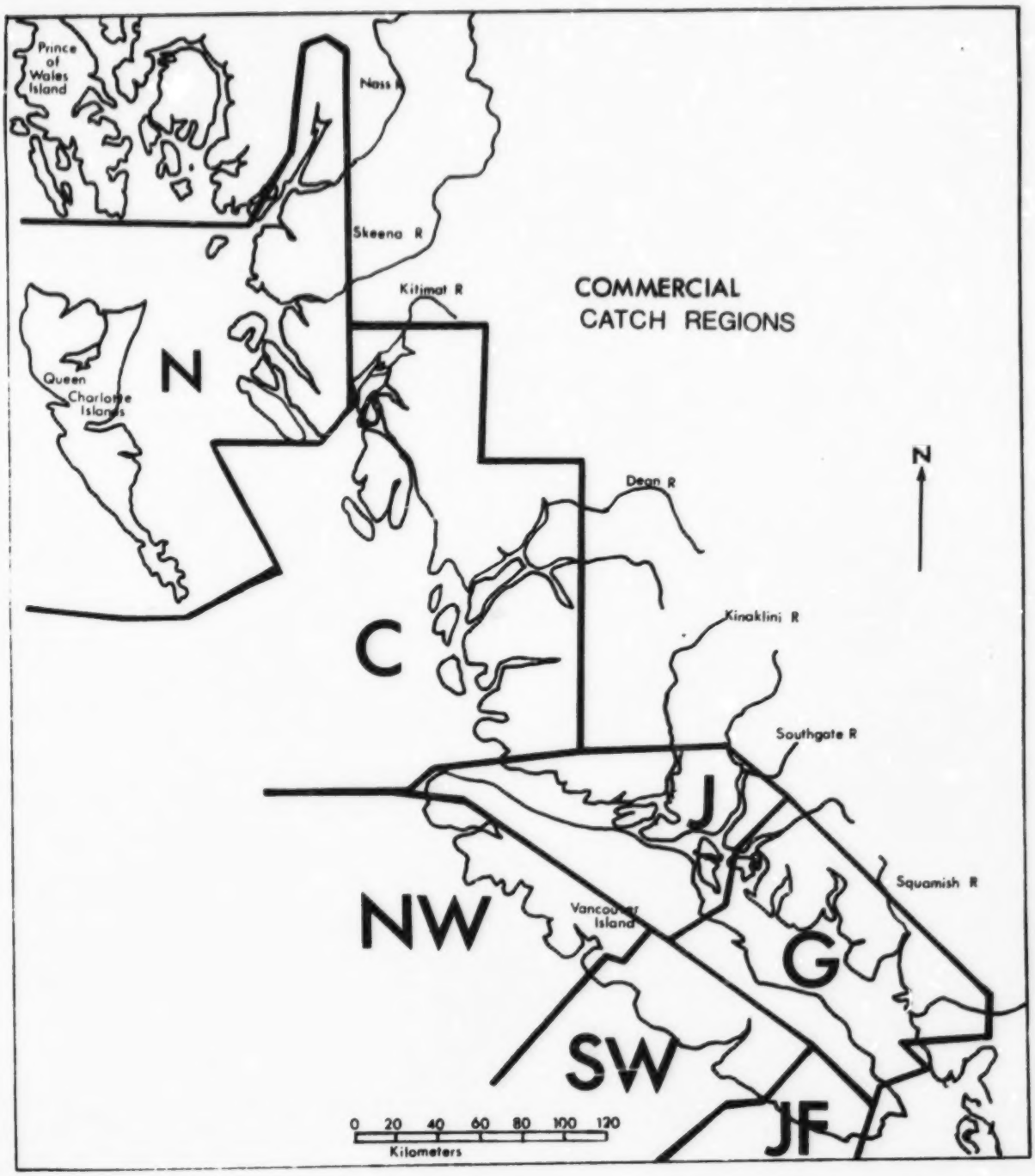

Fig. 1. Commercial Catch Regions in British Columbia. For legend (abbreviations) and statistical areas included refer to Table 5.

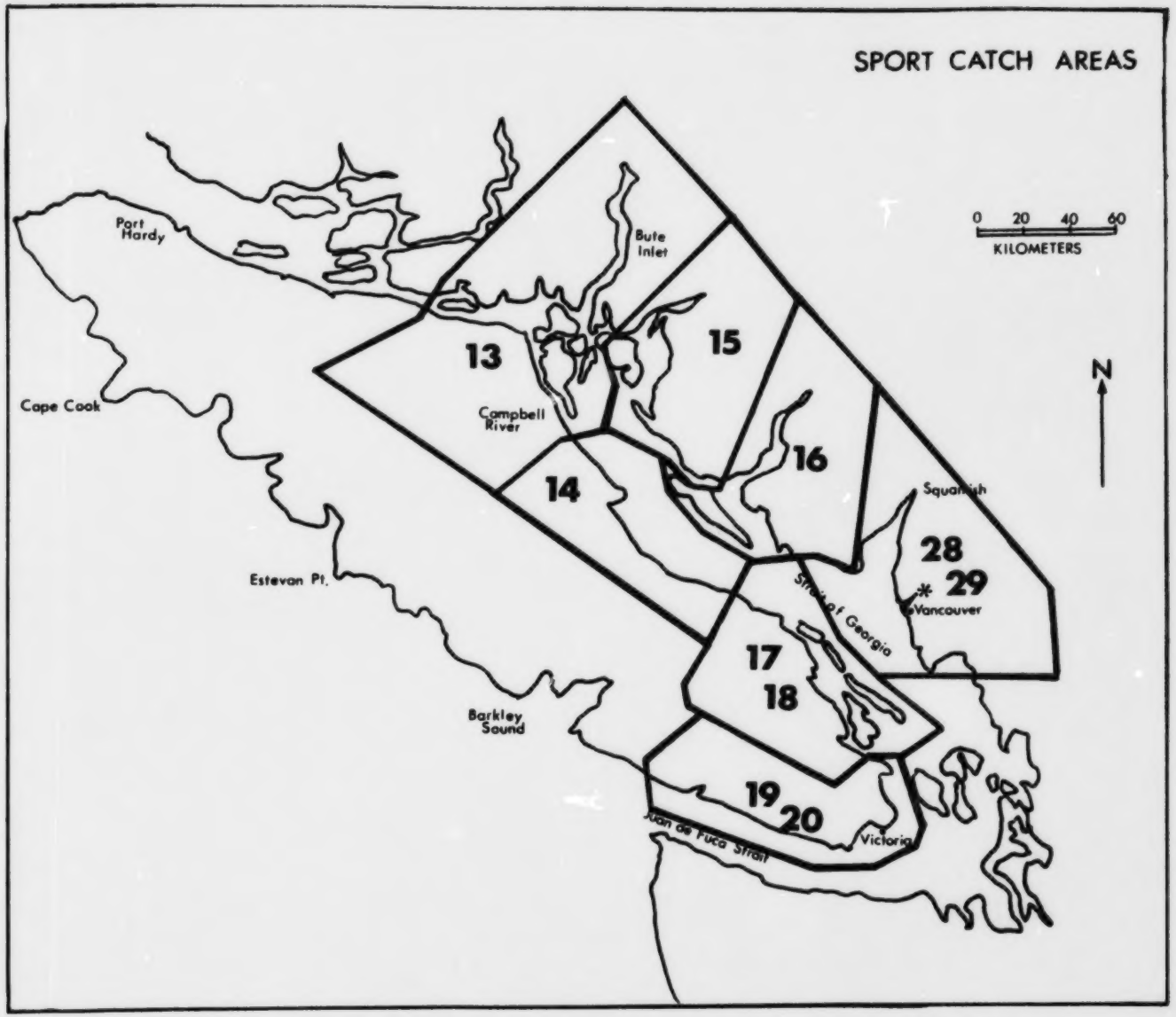

Fig. 2. Georgia Strait Sport Catch Region, statistical areas and location of the Capilano Salmon Hatchery (asterisk).